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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/702,219

11/05/2003

Udo Emil Frank

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7981

7590

03/21/2005

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EXAMINER

HO, ALLEN C

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

<b>Office Action Summary</b>	<b>Application No.</b> 10/702,219	<b>Applicant(s)</b> FRANK, UDO EMIL	
	<b>Examiner</b> Allen C. Ho	<b>Art Unit</b> 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-5, 7, 8, 11, 16 and 18-20 is/are rejected.  
 7) ☒ Claim(s) 6, 9, 10, 12-15 and 17 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 032004, 012005  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) ☐ Notice of Informal Patent Application (PTO-152)  
 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language..

2. Claims 1, 5, 7, 8, 11, 16, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Pierre (U. S. Patent No. 4,857,730).

With regard to claim 1, Pierre disclosed a microfocus x-ray tube for inspecting an object, comprising: a head (6) having an outer surface with a cross-section that tapers toward a free end of the head; a target (8) disposed on or in the head; and a means (5) for forming an electron beam (10) adapted to bombard the target, wherein the means forms the electron beam such that the x-ray tube has a focus with a diameter of  $\leq 200 \mu\text{m}$  (2R defines the maximum electron beam diameter; column 4, line 66 - column 5, line 42).

With regard to claim 5, Pierre disclosed a microfocus x-ray tube according to claim 1, wherein the outer surface of the head terminates in a vertex (D).

With regard to claim 7, Pierre disclosed a microfocus x-ray tube according to claim 1, wherein the outer surface of the head is formed at least partially by a collimator (9, 17) disposed a head of the target.

With regard to claim 8, Pierre disclosed a microfocus x-ray tube according to claim 1, wherein the outer surface of the head is formed at least partially by a holder (7) for the target.

With regard to claim 11, Pierre disclosed a microfocus x-ray tube according to claim 1, wherein the target is a transmission target.

With regard to claim 16, Pierre disclosed a collimator for the target of the x-ray tube of claim 1, wherein an outer surface of the collimator has a cross-section that tapers toward an end (D) of the collimator.

With regard to claim 18, Pierre disclosed a collimator according to claim 16, wherein the outer surface is essentially conical.

With regard to claim 19, Pierre disclosed a collimator according to claim 16, wherein the outer surface terminates in a vertex (D).

With regard to claim 20, Pierre disclosed a collimator according to claim 16, wherein the collimator has a continuous opening that extends in a irradiation direction of an x-ray beam.

3. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Loxley *et al.* (U. S. Patent No. 6,778,633 B1).

With regard to claims 1 and 2, Loxley *et al.* disclosed a microfocus x-ray tube for inspecting an object, comprising: a head (1) having an outer surface with a cross-section that tapers toward a free end of the head; a target (4) disposed on or in the head; and a means (3, 7) for forming an electron beam (8) adapted to bombard the target, wherein the means forms the

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electron beam such that the x-ray tube has a focus with a diameter of  $\leq 10 \mu\text{m}$  (column 4, lines 12-20).

With regard to claim 3, Loxley *et al.* disclosed a microfocus x-ray tube according to claim 1, wherein the outer surface of the heat is essentially rotationally symmetric about the electron beam.

With regard to claim 4, Loxley *et al.* disclosed a microfocus x-ray tube according to claim 3, wherein the outer surface of the head is essentially conical.

With regard to claim 5, Loxley *et al.* disclosed a microfocus x-ray tube according to claim 1, wherein the outer surface of the head terminates in a vertex.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierre (U. S. Patent No. 4,857,730).

With regard to claim 2, Pierre disclosed a microfocus x-ray tube according to claim 1. However, Pierre failed to disclose that the means forms the electron beam such that the x-ray tube has a focus with a diameter of  $\leq 10 \mu\text{m}$ .

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to configure the means for provide a focus with a diameter of  $\leq 10 \mu\text{m}$ . since

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a person would be motivated to study samples having a size of  $\leq 10 \mu\text{m}$ . As disclosed by Pierre, there exists samples having sizes  $\leq 1 \mu\text{m}$  (column 1, lines 53-65). A person would be motivated to study samples having a size of  $\leq 10 \mu\text{m}$  with an x-ray beam diameter smaller than the size of the samples to reduce contamination of the signal from the background.

***Allowable Subject Matter***

6. Claims 6, 9, 10, 12-15, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (1) Mihara *et al.* (U. S. Patent No. 6,826,254 B2) disclosed a tapered collimator.
- (2) Turner *et al.* (U. S. Patent No. 6,661,876 B2) disclosed an x-ray tube having a tapered head.
- (3) Annis *et al.* (U. S. Patent No. 4,825,454) disclosed a conical collimator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho  
Primary Examiner  
Art Unit 2882

15 March 2005